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Design PROCESS

National Park Service

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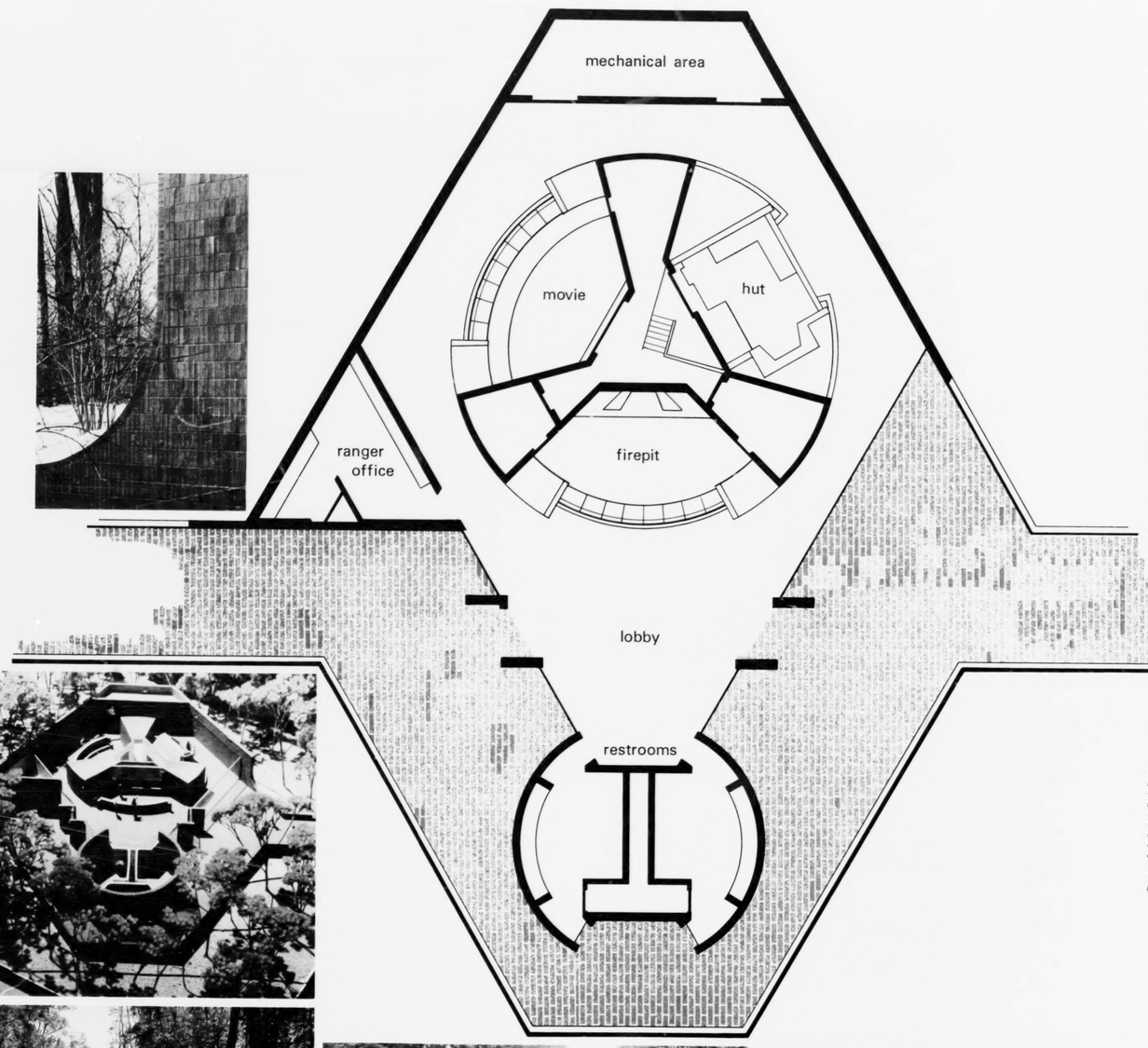
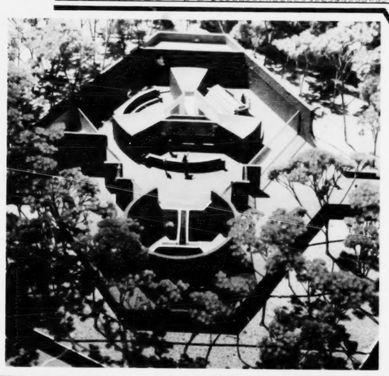
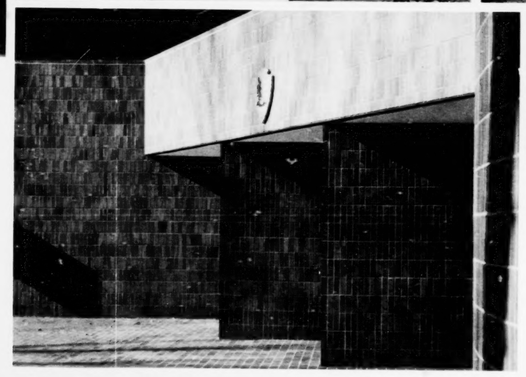




JOCKEY HOLLOW VISITOR CENTER
MORRISTOWN NATIONAL HISTORICAL PARK



INTRODUCTION

The philosophy for design and construction of national park facilities was established nearly 70 years ago when Secretary of the Interior Franklin Lane wrote to National Park Service Director Stephen Mather that all improvements in the parks should be carried out "in accordance with a preconceived plan developed with special reference to the preservation of the landscape." That philosophy has been further defined in the National Park Service management policies for park facilities, and it is reflected in the director's goals and objectives.

To preserve park landscapes and enhance opportunities for experiences within them, the Park Service must provide developments that are harmonious with the resources and setting, are visually pleasing, and meet the needs of both visitors and managers. Because of the large number and wide range of facility requirements in the national park system, a process has been developed to permit the Park Service to produce quality design work in an efficient manner. This document describes the activities involved in that process and the responsibilities for accomplishing, reviewing, and approving designs in the National Park Service. The process applies to all NPS design projects—line item, FLHP (federal lands highway program), ONPS (operations of the NPS), concession, and donation.

THE PROCESS

The NPS design process is a problem identification and solving process for developing new facilities or rehabilitating existing ones. The process includes four major phases: program formulation, project definition, advance planning, and project planning. The last two phases involve the actual preparation of designs and related products; however, the two preliminary phases are critical to ensure that all requirements are identified and scheduled, that an agreement about the nature and scope of work to be accomplished is established, and that the necessary funds are allocated.

The office or offices responsible for completing design projects are designated based on the following:

- *Line-item projects under $250,000 are assigned by the regional director.*
- *Line-item projects over $250,000 are the responsibility of the Denver Service Center and/or Harpers Ferry Center. Exceptions may be made if the regional director and associate director, Washington Office of Planning and Development, agree to designate other offices.*
- *FLHP project responsibilities are determined based on the current interagency agreement.*
- *ONPS, concession, and donation project responsibilities are determined by the regional director. The service centers provide technical assistance and review upon request from the regional director, if they are not directly responsible for the project.*

DESIGN SUPPORT INFORMATION

DSC Design Process Guideline

The Park Service has developed a guideline entitled "Operations Manual, Part II" that details the procedures and products in the design process. Copies of this guideline are available through the DSC Technical Information Center.

Design Guides

The DSC has developed a catalog of design standards to assist persons in the preparation of comprehensive, preliminary design and construction drawings. The guides are used in the production process when designers are called upon to produce drawing data for projects with features or characteristics similar to those of completed construction projects. The DSC and regional offices have been issued copies of the catalog.

There are other standards that the designer should be aware of, and many of these are found in federal and state regulations. There are standards that address the process of design as well as construction detail. Such standards can be found in the DSC Professional Support Division.

Cover Sheets

Standard cover sheets with vicinity and park maps have been predrafted for almost every unit of the national park system. A servicewide catalog of these cover sheets is available in the DSC Branch of Drafting, and a regional catalog is in each regional office. Orders for these standard covers should be sent to the DSC Branch of Drafting.

Information References

The DSC "Operations Manual, Part I" contains a directory of DSC services and references of depositories for informational purposes. Additional information is available from the following sources:

National Standards, Material, and Equipment Reference Library. *This library is stored in the DSC Professional Support Division. It includes all equipment and material catalogs, specifications, and illustrative literature.*

Technical Information Center. *As part of the normal functioning of the DSC Technical Information Center, two standard printouts are generated and distributed once a year to all field areas, and major offices of the NPS for their use:*

- *location printout information arranged by park and then by location within the park in numerical order*
- *subject matter printout information arranged by park and then by subject matter and location within the park in numerical order*

Other retrievable outputs can also be generated—listings of resource and site aerial photography, topographic maps, natural and cultural resources base information, planning documents, environmental documents, standard design drawings, various types of structures, utility systems, road information, and information about the park's physical state. This information can be retrieved for a park, a location within a park, a selected group of parks, a region, or the entire national park system. For any special needs or for more information on the capabilities of the system, call the DSC Technical Information Center.

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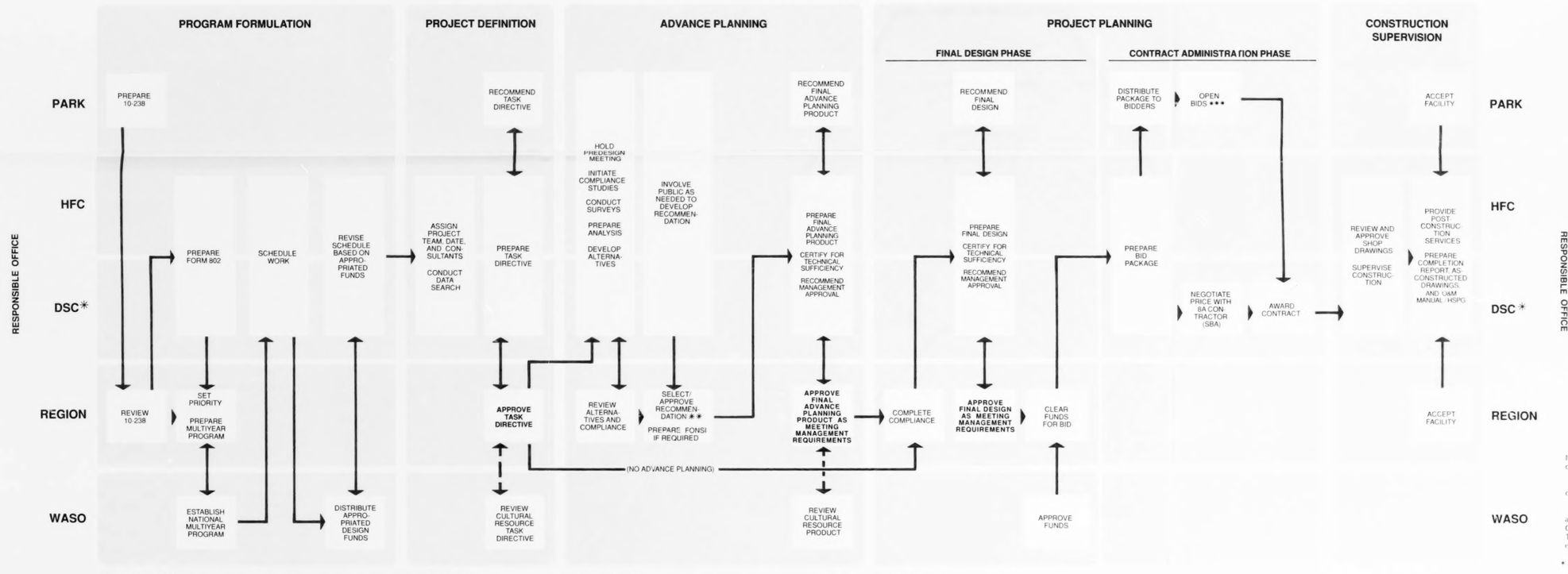


Note: Refer to NPS 28 for special instructions on cultural resource documents.

* Projects accomplished in the parks or regional offices follow the same procedures.

** Additional approvals by other government agencies may be required (National Capital Planning Commission, the Commission of Fine Arts, etc.). These approvals must be received before project enters final design phase.

*** Sometimes performed by others.

Program Formulation

Design projects are initially programmed by the park superintendent, who identifies the problem or need for service and submits a request to the regional office on a *form 10-238*. The request must be based on a previously approved plan that identifies the need to develop or rehabilitate facilities. Regional office staff review the request to ensure that the project is needed and that technical requirements are properly defined.

Once the request is approved by the regional director, it is sent to the responsible office to determine the level and type of work to be scheduled, work sequencing, projected costs, and compliance requirements. This information, along with the original request, is furnished to the regional office on a *form 802*. The regional office reviews the complete design request package, sets priorities on all requests received, and submits a regional priority list to the Washington Office. The director and regional directors set the servicewide priorities on a yearly basis, and these priorities determine the funding requests for the NPS construction budget. Both regional and servicewide priorities are reviewed yearly and revised as necessary.

Project Definition

When the new design projects have been received and reviewed, the responsible office evaluates manpower resources and the status of ongoing projects and makes project team assignments. The project team is responsible for the production and the professional and technical quality of all reports and design work related to a project and for coordination with other offices in project accomplishment. Project coordinators are designated in the park, regional office, and, when applicable, Denver Service Center and Harpers Ferry Center. These people act as liaisons throughout the project and constitute what is called the design assistance team. The lead member of the design assistance team is from the office responsible for the project.

Consultant involvement also begins early in a design project. Most consultation is informal and continuous to achieve productivity and good professional relationships. For some projects, specific services may be formally requested. For example, the project team may request that consultants provide technical expertise when no equivalent skill is available in the responsible office or additional advice is needed.

One of the first activities of the project team is to search all sources of data from previous projects. The 10-238 identifies major data sources and provides references to completed projects from which data may be secured. The planning and cultural resource work efforts for a park usually result in reports containing relevant reference material; the DSC Technical Information Center maintains a product file for each park and forwards copies of reports upon request. The DSC Statistical Branch generates data on visitor use and recent visitation trends, and the parks and regional offices have continuing research projects that may offer additional data. In addition to these organizational sources, the team captains of related projects in the same park can frequently provide background information not available in the filing systems.

Following data collection, the project team prepares a *task directive*. The task directive is an agreement between the park, region, and responsible office on the tasks to be accomplished, and it records the responsibility and authorization to proceed with advance and project planning. It is a critical product because it
nes the objectives, scope, key steps,
schedule for the project; lists the
mbers; indicates available and
funding; and identifies previous
cisions and new or additional
vironmental or cultural com-
involvement, and special
most projects the task direc-
pared two years before con-
ated to allow sufficient time
dvance and project plan-
plex or sensitive projects,
may be required. The
esponsible office recom-
ment, the park superin-
the regional director

Advance Planning

Advance planning includes comprehensive or preliminary design and all related work efforts necessary to document and support design decisions. Depending on the nature of the project, initial reports and surveys may be needed to document compliance with the National Environmental Policy Act and National Historic Preservation Act and provide the detail necessary to initiate comprehensive or preliminary design. The scope and requirements of these reports are identified in the task directive for the design project or in separate task directives. The work is accomplished by project team members or other designated professionals. Initial reports and surveys may include a development concept plan or historic structure report, an archeological survey, and other special studies. The development concept plan provides guidance for the development and use of a particular geographic area within a park; the historic structure report evaluates and recommends treatments for a historic or prehistoric structure consistent with the building's significance, integrity, condition, and programmed use; and the archeological survey locates any archeological resources that might be affected by a project and defines the characteristics of those resources. Interpretive planning documents are also prepared at this stage, if required.

Comprehensive design addresses the major portion of a developed area and evaluates all facilities proposed for the area, including their relationship to existing facilities. Not all projects require comprehensive design. If needed, it is the first phase of design, and the resulting product includes a proposed development schedule that identifies any facilities for which preliminary design is required. *Preliminary design* focuses on a single facility, such as a campground, lodge, visitor center, employee housing area, water treatment plant, parking lot, or access road; it also delineates the utility connections, walks, and landscaping to support the primary facility. Preliminary design is intended to provide sufficient detail and technical information to make design recommendations.

The first activity of comprehensive or preliminary design is the design analysis. This analysis defines the design problem, evaluates feasible alternatives for its solution, documents and gives the rationale for the selection of a preferred alternative, and provides the necessary support materials to permit management evaluation and recommendation. During the early stages of design analysis, the project team develops preliminary alternatives in the form of rough sketches. These sketches are used to convey alternative design approaches and concepts to management before the designs are fully developed. After these concepts are discussed with management, the most desirable alternatives are selected for full design analysis.

When the design analysis and alternatives are developed, they are presented to the design assistance team, park and region management, and, when appropriate, the service centers and concessioner. They may be presented in a formal report, or the alternatives may simply be packaged together with all relevant support data for review and presentation purposes. The use of simulation models, or computer animations, may be helpful at this stage to aid in visualizing the alternative designs within the existing landscape. After the presentation, a design proposal is selected that becomes the basis for the comprehensive or preliminary design drawings. Occasionally, new alternatives are suggested at this session that require further analysis and development. In such cases, an additional presentation may be required.

The comprehensive or preliminary design and the accompanying design documents are then completed. The project team develops and expands the proposal to document agreements and decisions, and the design assistance team is kept informed of design development and any changes that might require additional review. An in-park presentation is scheduled to provide management with an "on the ground," plans-in-hand look at the design. If a simulation model has been developed, it is included in the presentation.

After the design drawings and support materials are prepared and accepted, they are reviewed and certified for technical sufficiency by the manager of the responsible office, concurred in by the park superintendent, and approved as meeting management requirements by the regional director.

Project Planning

Project planning is the last phase of the design process, and it provides the final drawings and details necessary to initiate construction. The work includes preparation of architectural, engineering, and landscape architectural *construction drawings and specifications* and final estimates for buildings, utility systems, roads, trails, bridges, and other facilities.

Some projects do not require comprehensive or preliminary design before the preparation of construction documents, for example, simple demolition or utility replacement projects. These projects are identified by the responsible office, and the omission of the advance planning phase is noted in their task directives. In these cases, the construction documents are prepared following the approval of the task directive. The approval procedure for the construction documents follows that of a comprehensive or preliminary design.

An informal meeting is held when construction drawing preparation is approximately 50 percent complete. This meeting is coordinated by the responsible office and involves key members of the project team, the design assistance team, and consultants. Design calculations, updated construction cost estimates, and partial specifications are also reviewed at this meeting. A plans-in-hand review is conducted at the park before completion of the final design (normally when the project is about 95 percent complete). It includes key project team members, the design assistance team, the construction project supervisor, park and regional managers, and the concessioner when appropriate.

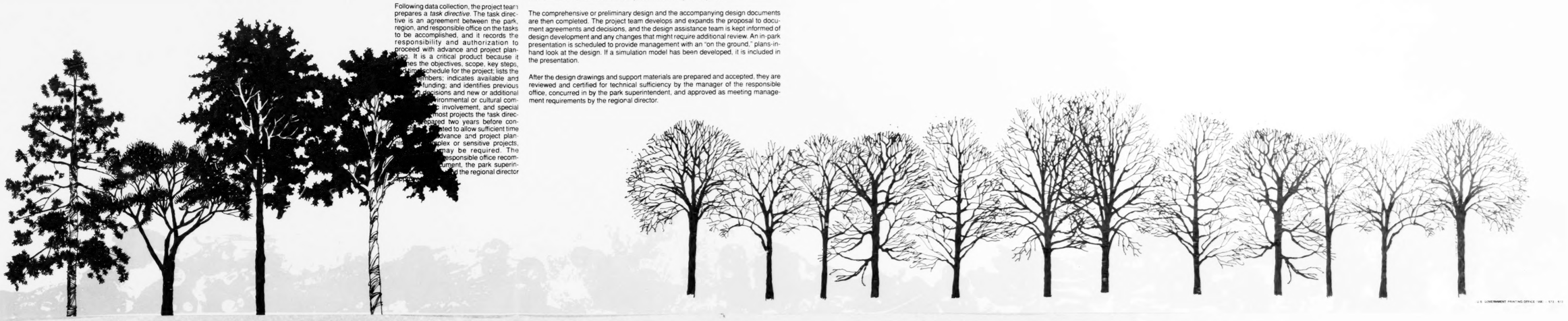
After the review comments have been considered, design documents are certified for technical sufficiency by the manager of the responsible office, concurred in by the park superintendent, and approved as meeting management requirements by the regional director.

The final step in project planning is the completion of the project specifications and contractual documents and the bidding and awarding of the construction contract. The specifications, bid schedule, and associated documents are prepared; the prebid information, bidding forms, contract forms, conditions of the contract, and wage rates are included with the contractual documents; and the project manual is assembled, printed, and shipped, together with prints of the construction drawings, to the NPS office that will be responsible for issuing the construction contract.

The bid process is then completed, the construction contract is awarded, and construction is initiated. The steps involved in the bid process and the responsibilities during construction supervision are detailed in the NPS "Construction Supervision Guidelines." The design project team remains available throughout the construction project to consult on any design changes and is responsible for documenting project modifications such as changes orders.

REVIEW AND APPROVAL RESPONSIBILITIES

The review process has two parts. It certifies the technical feasibility of a design, its completeness, and its ability to solve the problems originally identified by the park, and it verifies that the design meets management requirements. The office responsible for a design project performs the technical review and quality control check of the products and certifies their technical sufficiency. The regional director is responsible for reviewing and approving design products as meeting management requirements. Approval of all task directives, development concept plans, cultural resource documents, and environmental documents that are part of a design project is also the responsibility of the regional director.



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